Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-19 (Cancelled).

20. (New) A method of separating and recovering an acid/sugar solution and a lignophenol derivative, comprising

putting a reaction mixture of a lignocellulostic material, a phenol derivative and an acid into an amount of water 0.5 to 6 times the amount of the mixture as a volume ratio, and

leaving to stand or maintaining a weakly agitated state, so as to agglomerate a lignophenol derivative produced as a solid phase, and

then carrying out solid-liquid separation, so as to separate and recover the solid phase acid/sugar solution.

21. (New) The method according to claim 20, wherein the reaction mixture of the lignocellulosic material, the phenol derivative and the acid is diluted with an amount of water substantially the same as the amount of the reaction mixture as a volume ratio.

22. (New) The method according to claim 20, wherein the solid-liquid separation is carried out using a filtration apparatus.

23. (New) The method according to claim 20 wherein the acid/sugar solution recovered as the liquid phase through the solid-liquid separation is further subjected to second solid-liquid separation so as to remove residual suspended solids (SS) as a solid phase.

24. (New) The method according to claim 20, wherein lignophenol derivative-containing solid matter, recovered as the solid phase through the solid-liquid separation, is further subjected to a third and a fourth dispersion in water and solid-liquid separation, whereby the recovery rate for the acid and the sugar in the reaction of the lignocellulosic material, the phenol derivative and the acid is improved.

25. (New) The method according to claim 24, wherein a liquid phase obtained from the third solid-liquid separation and/or the fourth solid-liquid separation is used as diluting water put into the reaction mixture of the lignocellulosic material, the phenol derivative and the acid.

26. (New) An apparatus for recovering an acid/sugar solution, comprising:

an aqueous dilution tank that receives water, and has means for putting a reaction mixture of a lignocellulosic material, a phenol derivative and an acid into the water;

a first solid-liquid separation apparatus that receives the diluted reaction mixture, and is adapted for and capable of carrying out solid-liquid separation so as to separate off a lignophenol derivative as a solid phase; and

a second solid-liquid apparatus for further carrying out solid-liquid separation treatment on a liquid phase recovered from the first solid-liquid separation apparatus so as to separate out residual suspended solid (SS) as a solid phase.

27. (New) An apparatus for recovering an acid/sugar solution, comprising:

an aqueous dilution tank that receives water, and has means for putting a reaction mixture of a lignocellulosic material, a phenol derivative and an acid into the water;

a first solid-liquid separation apparatus that receives the diluted reaction mixture, and is adapted for and capable of carrying out solid-liquid separation so as to separate off a lignophenol derivative as a solid phase; and

a standing tank for leaving a liquid phase recovered from the first solid-liquid separation apparatus that receives liquid from the standing tank, and is adapted for and capable of further carrying out solid-liquid separation treatment so as to separate out residual suspended solids (SS) as a solid phase.

28. (New) An apparatus for recovering lignophenol derivatives and an acid/sugar solution, comprising:

an acid treatment/aqueous dilution tank that receives a phenol derivative-impregnated lignocellulosic material, and has means for adding an acid to the lignocellulosic material, and means for putting diluting water into a reaction mixture containing the lignocellulosic material on which acid treatment has been carried out through the addition of the acid;

a first solid-liquid separation apparatus that receives the diluted reaction mixture, and is adapted for carrying out solid-liquid separation so as to separate off a lignophenol derivative as a solid phase;

a second solid-liquid separation apparatus adapted for further carrying out solid-liquid separation treatment on a liquid phase recovered from the first solid-liquid separation apparatus so as to separate out residual SS as a solid phase;

an agitating tank that receives the solid matter recovered through the first solid-liquid separation, and is adapted for adding water to the solid matter and agitating; and

a third solid-liquid separation apparatus that receives an aqueous slurry recovered from the agitating tank, and is adapted for carrying out solid-liquid separation.

29. (New) An apparatus for recovering lignophenol derivatives and an acid/sugar solution, comprising:

an acid treatment/aqueous dilution tank that receives a phenol derivative-impregnated lignocellulosic material, and has means for adding an acid to the lignocellulosic material, and means for putting diluting water into a reaction mixture containing the lignocellulosic material on which acid treatment has been carried out through the addition of the acid;

a first solid-liquid separation apparatus that receives the diluted reaction mixture, and adapted is for carrying out solid-liquid separation so as to separate off a lignophenol derivative as a solid phase;

a second solid-liquid separation apparatus for further carrying out solid-liquid separation treatment on a liquid phase recovered from the first solid-liquid separation

apparatus so as to separate out residual suspended solids (SS) as a solid phase;

a crushing apparatus that receives the solid matter recovered through the first solid-liquid separation, and is adapted for crushing the solid matter;

an agitating tank for adding water to the crushed solid matter; and

a third solid-liquid separation apparatus that receives an aqueous slurry recovered from the agitating tank, and is adapted for carrying out solid-liquid separation.

30. (New) An apparatus for recovering a lignophenol derivative and an acid/sugar solution, comprising:

an acid treatment tank that receives a phenol derivative-impregnated lignocellulosic material, and is adapted for adding an acid to bring about reaction;

an aqueous dilution tank that receives a reaction mixture of the lignocellulosic material, the phenol derivative and the acid recovered from the acid treatment tank, and has means for putting in diluting water;

a first solid-liquid separation apparatus that receives the diluted reaction mixture, and is adapted for carrying out solid-liquid separation so as to separate off a lignoohenol derivative as a solid phase;

a second solid-liquid separation apparatus for further carrying out solid-liquid separation treatment on a liquid phase recovered from the first solid-liquid eparation apparatus so as to separate out residual suspended solids (SS) as a solid phase;

an agitation tank that receives the solid matter recovered through the first solid-liquid separation, and is adapted for adding water to the solid matter and agitating; and

a third solid-liquid separation apparatus that receives an aqueous slurry recovered from the tank, and is adapted for carrying out solid-liquid separation.

31. (New) An apparatus for recovering a lignophenol derivative and an acid/sugar solution, comprising:

an acid treatment tank that receives a phenol derivative-impregnated lignocellulosic material, and is adapted for adding an acid to bring about reaction;

an aqueous dilution tank that receives a reaction mixture of the lignocellulosic material, the phenol derivative and the acid recovered from the acid treatment tank, and has means for putting in diluting water;

a first solid-liquid separation apparatus that receives the diluted reaction mixture, and is adapted for

carrying out solid-liquid separation so as to separate off a lignoohenol derivative as a solid phase;

a second solid-liquid separation apparatus for further carrying out solid-liquid separation treatment on a liquid phase recovered from the first solid-liquid separation apparatus so as to separate out residual suspended solids (SS) as a solid phase;

a crushing apparatus that receives the solid matter recovered through the first solid-liquid separation, and is adapted for crushing the solid matter;

an agitating tank for adding water to the crushing solid matter and agitating; and

a third solid-liquid separation apparatus that receives an aqueous slurry recovered from the agitating tank, and is adapted for carrying out solid-liquid separation.

32. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claims 28, further comprising an agitating tank that receives solid matter recovered from the third solid-liquid separation apparatus, and is adapted for adding water to the solid matter and agitating; and a fourth solid-liquid separation apparatus that receives an aqueous slurry recovered from the agitating tank, and is adapted for carrying out solid-liquid separation.

33. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claims 29, further comprising an agitating tank that receives solid matter recovered from the third solid-liquid separation apparatus, and is adapted for adding water to the solid matter and agitating; and a fourth solid-liquid separation apparatus that receives an aqueous slurry recovered from the agitating tank, and is adapted for carrying out solid-liquid separation.

34. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claims 30, further comprising an agitating tank that receives solid matter recovered from the third solid-liquid separation apparatus, and is for adding water to the solid matter and agitating; and a fourth solid-liquid separation apparatus that receives an aqueous slurry recovered from the agitating tank, and is for carrying out solid-liquid separation.

35. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claims 31, further comprising an agitating tank that receives solid matter recovered from the third solid-liquid separation apparatus, and is for adding water to the solid matter and agitating; and a fourth solid-liquid separation apparatus that

receives an aqueous slurry recovered from the agitating tank, and is for carrying out solid-liquid separation.

36. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claims 28, further comprising: a crushing apparatus that receives solid matter recovered from a third solid-liquid separation apparatus, and is for crushing the solid matter; an agitating tank for adding water to the crushing solid matter and agitating; and a fourth solid-liquid separation apparatus that receives an aqueous slurry recovered from the agitating tank, and is for carrying out solid-liquid separation.

37. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claims 29, further comprising: a crushing apparatus that receives solid matter recovered from a third solid-liquid separation apparatus, and is for crushing the solid matter; an agitating tank for adding water to the crushing solid matter and agitating; and a fourth solid-liquid separation apparatus that receives an aqueous slurry recovered from the agitating tank, and is for carrying out solid-liquid separation.

38. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claims 30, further comprising: a crushing apparatus that

receives solid matter recovered from a third solid-liquid separation apparatus, and is for crushing the solid matter; an agitating tank for adding water to the crushing solid matter and agitating; and a fourth solid-liquid separation apparatus that receives an aqueous slurry recovered from the agitating tank, and is for carrying out solid-liquid separation.

39. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claims 31, further comprising: a crushing apparatus that receives solid matter recovered from a third solid-liquid separation apparatus, and is for crushing the solid matter; an agitating tank for adding water to the crushing solid matter and agitating; and a fourth solid-liquid separation apparatus that receives an aqueous slurry recovered from the agitating tank, and is for carrying out solid-liquid separation.

40. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 36, wherein the first solid-liquid separation apparatus and the fourth solid-liquid separation apparatus are constituted from the same apparatus.

41. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 37, wherein the first solid-liquid separation apparatus

and the fourth solid-liquid separation apparatus are constituted from the same apparatus.

42. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 38, wherein the first solid-liquid separation apparatus and the fourth solid-liquid separation apparatus are constituted from the same apparatus.

43. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 39, wherein the first solid-liquid separation apparatus and the fourth solid-liquid separation apparatus are constituted from the same apparatus.

44. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 36, wherein the third solid-liquid separation apparatus and the fourth solid-liquid apparatus are constituted from the same apparatus.

45. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 37, wherein the third solid-liquid separation apparatus and the fourth solid-liquid apparatus are constituted from the same apparatus.

46. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 38, wherein the third solid-liquid separation apparatus and the fourth solid-liquid apparatus are constituted from the same apparatus.

47. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 39, wherein the third solid-liquid separation apparatus and the fourth solid-liquid apparatus are constituted from the same apparatus.

48. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 32, further comprising means for supplying a liquid phase recovered from the third solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

49. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 33, further comprising means for supplying a liquid phase recovered from the third solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

50. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 34, further comprising means for supplying a liquid phase recovered from the third solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

51. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 35, further comprising means for supplying a liquid phase recovered from the third solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

52. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 36, further comprising means for supplying a liquid phase recovered from the third solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

53. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 37, further comprising means for supplying a liquid phase recovered from the third solid-liquid separation

apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

54. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 38, further comprising means for supplying a liquid phase recovered from the third solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

55. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 39, further comprising means for supplying a liquid phase recovered from the third solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

56. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 32, further comprising means for supplying a liquid phase recovered from the fourth solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

57. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to

claim 33, further comprising means for supplying a liquid phase recovered from the fourth solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

58. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 34, further comprising means for supplying a liquid phase recovered from the fourth solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

59. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 35, further comprising means for supplying a liquid phase recovered from the fourth solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

60. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 36, further comprising means for supplying a liquid phase recovered from the fourth solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

61. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 37, further comprising means for supplying a liquid phase recovered from the fourth solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

62. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 38, further comprising means for supplying a liquid phase recovered from the fourth solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.

63. (New) The apparatus for recovering a lignophenol derivative and an acid/sugar solution according to claim 39, further comprising means for supplying a liquid phase recovered from the fourth solid-liquid separation apparatus into the acid treatment/aqueous dilution tank or the aqueous dilution tank as a diluting liquid.